



Contaminants of Emerging Concern



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USEPA Region 1
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Overview

- What are Emerging Contaminants?
- Why the Concern?
- What is EPA Doing?
- What can You Do





Emerging Contaminants (ECs)

Broadly defined by the scientific community as pollutants that are currently not included in routine monitoring programs, and which may be candidates for future regulation depending on research results on their:

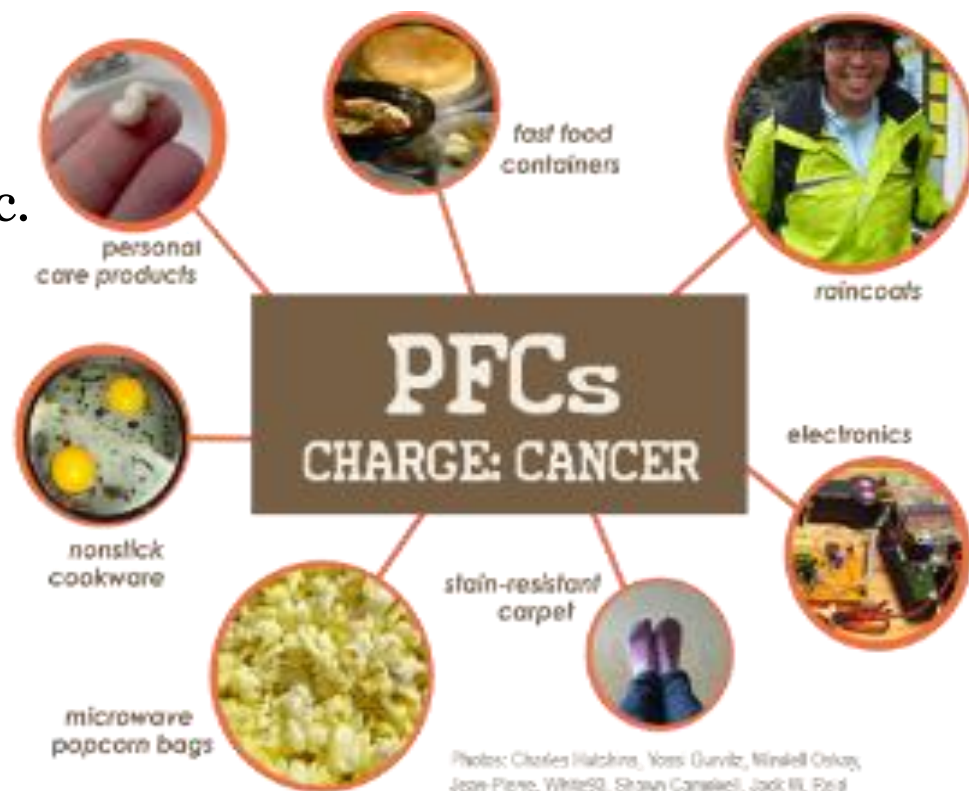
- toxicity,
- potential health effects,
- occurrence in various environmental matrices, &
- public perception

What are They?

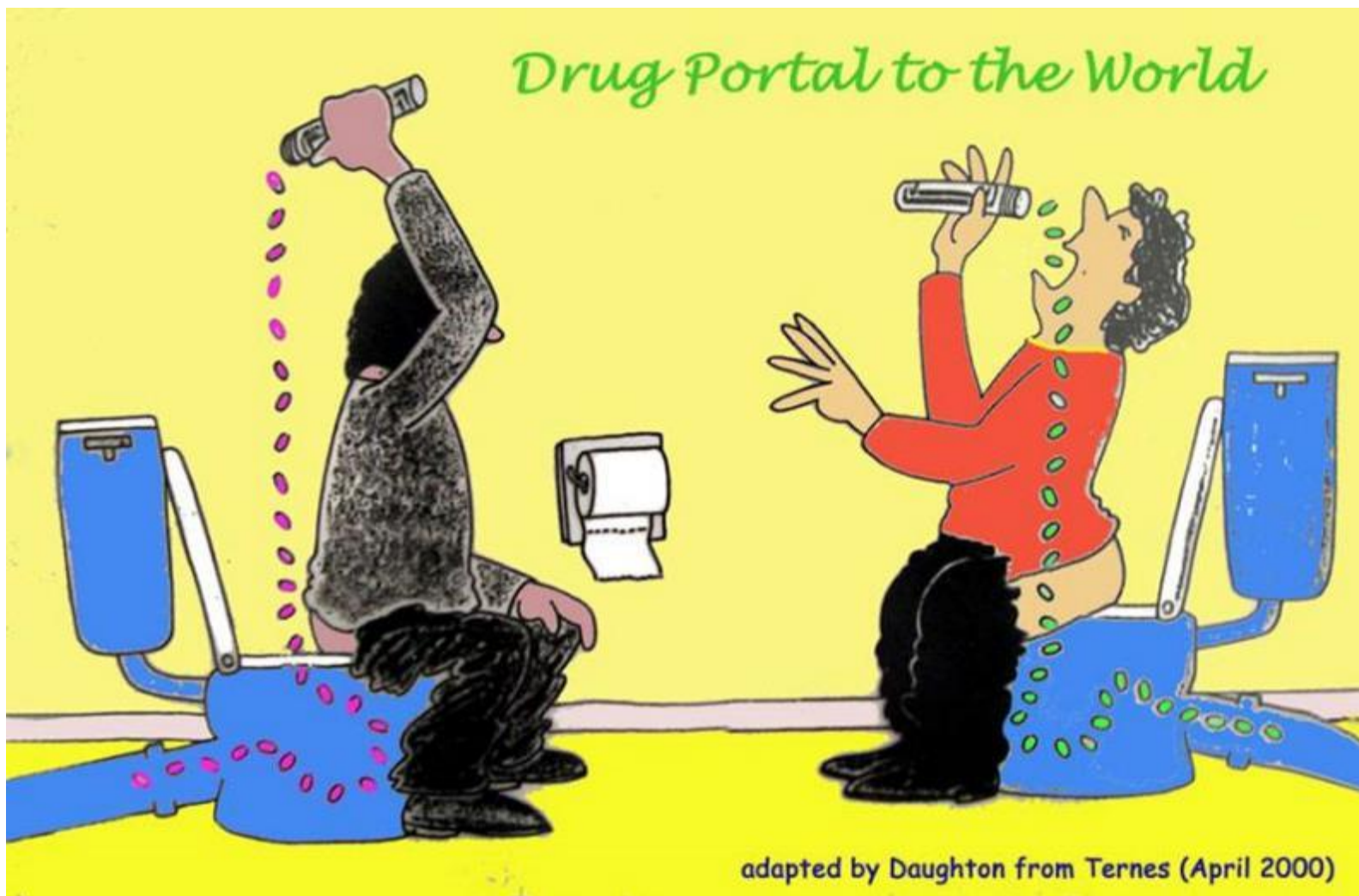
- PPCPs: Pharmaceuticals & personal care products – prescription & over the counter drugs, veterinary drugs, fragrances & cosmetics, lotions, shampoos, soaps, deodorants, etc.

Focus on:

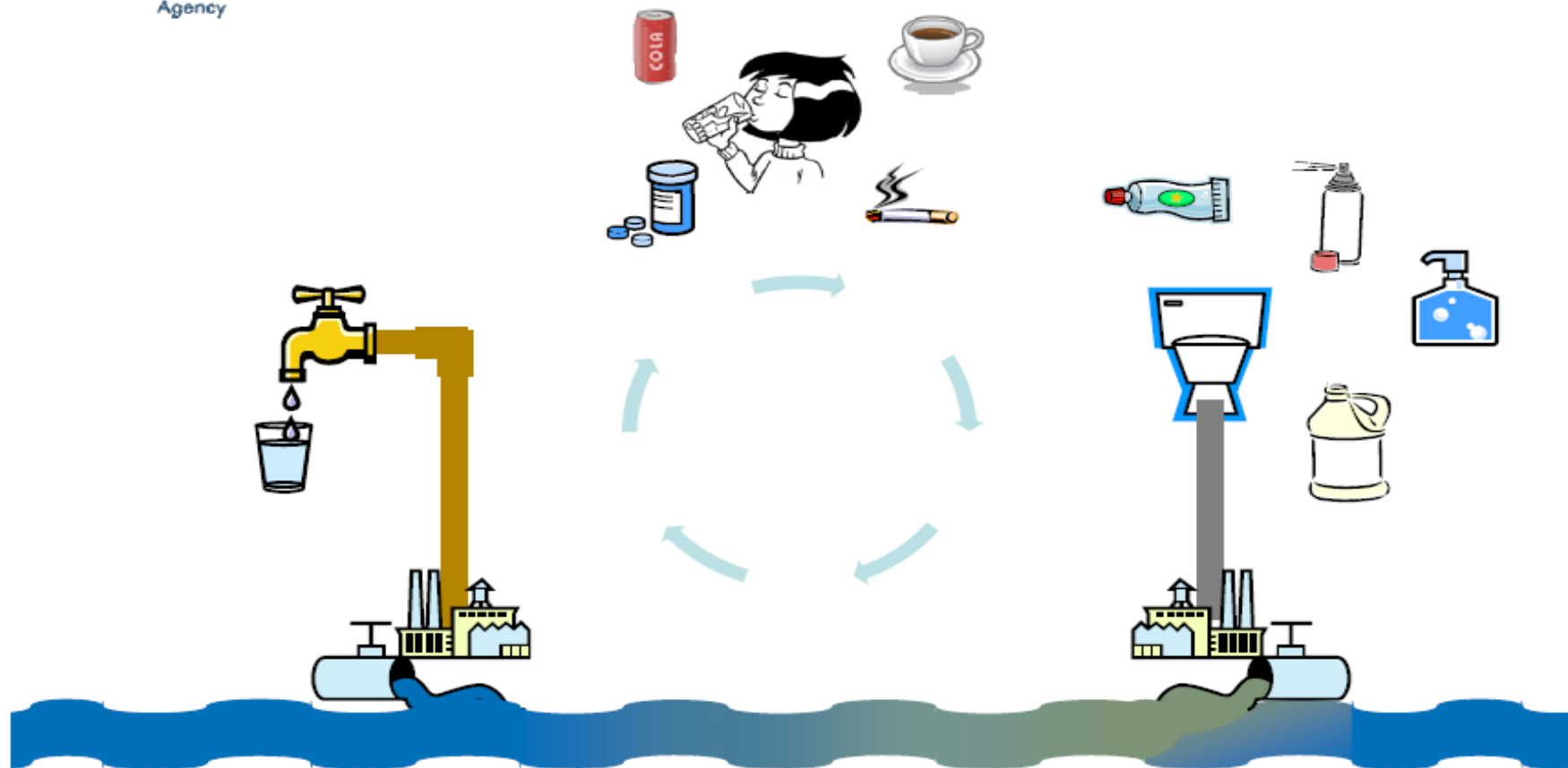
- 1,4 dioxane
- Perfluorinated compounds



Pathway into the Environment



CECs and the Water Cycle



Why the Concern?

Human vs Ecological Risk

- PPCPs -No clear evidence of human health risks from drinking water or wastewater
 - Much better documentation of effects on aquatic organisms
- 1, 4 Dioxane & PFOA/PFOS





What is EPA doing?

EPA's Strategy & Activities

- Strengthen our scientific knowledge
- Improve public understanding & risk communication
- Build partnerships for stewardship
- Use regulatory tools as needed



Strengthen Scientific Knowledge

- We need to collect more data on how & how much PPCP waste is being release into the environment and how PPCP waste affects human health and the environment.

- On going research -

<http://www.epa.gov/ppcp/work.htm>

- Pharmaceuticals in the Environment (PiE) workgroup to better coordinate federal research efforts

11 agencies (EPA, FDA, USGS, NOAA, DEA, FWS, CDC.

NIEHS, USDA, DOJ, ONDCP





Improving Public Understanding

- ONDCP guidance on disposal of PPCP waste
- EPA PPCP website – www.epa.gov/ppcp/
- EPA compliance assistance for healthcare sector website
- <http://www.hercenter.org/hazmat/pharma.cfm>



*Pollution Prevention and
Compliance Assistance
Information for the
Healthcare Industry*





Build Partnerships for Stewardship

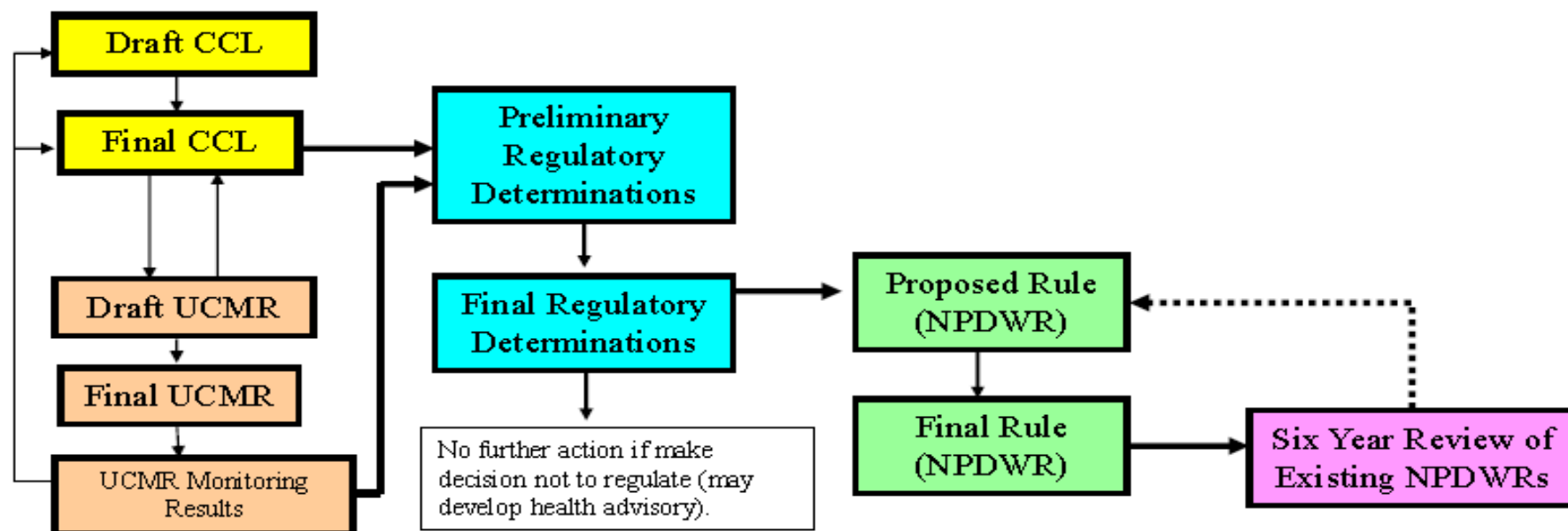
- US Fish & Wildlife/APhA/PhRMA SMARxt program
 - Raise awareness about proper medication disposal
 - Encourage consumers not to use the outdated advice of “flush unused medications or pour them down the sink”*
 - Provide consumers with environmentally friendly alternatives
- Many state & local government partnerships & collection programs
pharmwaste@lists.dep.state.fl.us



Regulatory Tools

- Office of Water establishes a list of contaminants in drinking water that might be regulated through the Contaminants Candidate List (CCL)
- Office of Water collects occurrence data under Unregulated Contaminants Monitoring Rule (UCMR) to assist in regulatory decision making.

MCL Regulatory Process



At each stage, need increased specificity and confidence in the type of supporting data used (e.g. health and occurrence).



UCMR

- Collect occurrence data for suspected drinking water contaminants that do not have health-based standards set under SDWA
- Occurrence information is used to support future regulatory decision-making
 - Supports the Administrator's determination of whether (or not) to regulate
- Data collected by those serving $>10,000$ & sample of 800 serving $\leq 10,000$.



UCMR 3

- Final rule – April 16, 2012
- 28 chemicals & 2 viruses
- Monitoring cycle - 2013-2015



UCMR Contaminants – 3

- 7 - Hormones
- 7 - VOCs
- 1 - SOC
- 6 - Metals
- 1 - Oxyhalide Anion
- 6 - Perfluorinated chemicals

Includes 1, 4 Dioxane & PFOA/PFOS



1,4 Dioxane

- Industrial solvent
- Solvent stabilizer and corrosion inhibitor
- Used in plastics, pharmaceutical, and consumer products.
- Residues present in manufactured food additives, food packaging products and on crops treated with some pesticides.



What about it?

- Completely miscible in water.
- Moves rapidly in GW, often leading edge of chlorinated plume. GW primary media of concern.
- Difficult to treat to low levels.



What do we know?

- 1,4 Dioxane may be present in greater frequency in ground water, wastewater, and drinking water sources;
- Detections in drinking water supplies range from 0.07 – 10 ppb;
- Most prevalent sources are chlorinated solvent waste sites, landfills, and other groundwater discharge sites;



Drinking Water Perspective

- No Federal MCL
- On EPA's Contaminant Candidate List (CCL)
- Unregulated Contaminant Monitoring Rule (UCMR)
2013 – 2015 Data





UCMR Results for 1,4 Dioxane (as of Jan)

- Available online to public
- National: 0.07 – 9.2 ppb
 - 1446 PWSs with sample results
 - 280 PWSs (19%) with detects > 0.07 ppb
 - 94 PWSs (6.5%) > 0.35 ppb

❖ **Utilities Affected:** Community water systems (CWSs) and non-transient non-community water systems (NTNCWSs) with more than 10,000 retail customers and a representative sample of 800 systems serving 10,000 or fewer retail customers are required to conduct Assessment Monitoring.



New England UCMR Results 1,4 Dioxane (as of Jan)

- New England: 0.07 - 3.6 ppb
 - 80 PWSs with sample results
 - 15 PWSs (19%) with detects >0.07 ppb
 - CT (1), RI (1), VT (1), and MA (12)
- 2 PWSs (2.5%) > 0.35 ppb
Medway, MA & Wallingford, CT



EPA Region 1 Plans for 1,4 Dioxane

- Coordinate with EPA's Design for the Environment Program
- Working with NHDES, evaluate DW/GW occurrence and complete the NH Waste Site Analysis
- Screen for 1,4-dioxane at EPA Waste Sites with chlorinated solvents and assess during 5 year reviews
- Monitor selected cases and consider analytical support, as available



Perfluorinated Compounds

- PFCs or more accurately perfluoroalkyls, are manmade compounds used in the manufacture of stain, oil, and water resistant consumer products.
- Also found in firefighting foams, cleaners, cosmetics, paints adhesives and insecticides.



What Do We Know ?

- PFOS and PFOA are extremely persistent in the environment and resistant to typical environmental degradation processes.
- They are widely distributed and are found in soil, air and groundwater at sites across the US
- The toxicity, mobility and bioaccumulation potential of PFOS and PFOA pose potential adverse effects for the environment and human health



Drinking Water Perspective PFOA and PFOS

- No Federal MCL
- On EPA's Contaminant Candidate List and
- Unregulated Contaminant Monitoring Rule 2013-2015 Data



Drinking Water Perspective

- In 2009, OW established a provisional health advisory for PFOS and PFOA to assess the potential risk from short term exposure to these chemicals through drinking water.
- PFOS – 0.4 ug /L
- PFOA - 0.2 ug/L



Region 1 Data

- 9 detections for PFOA (through Dec. 2014).
- 3 PWSs in MA (Danvers, Hyannis and Westfield).
- 2 PWSs in NH (Dover and Merrimack)

The detections ranged from 0.02 to 0.067 micrograms/liter.

CCR and PN Requirements



- Water systems applicable to UCMR 3 should also be aware of related requirements:
 - Consumer Confidence Reports

Suggested explanation of monitoring:

Unregulated contaminants are those that don't yet have a drinking water standard set by USEPA. The purpose of monitoring for these contaminants is to help EPA decide whether the contaminants should have a standard.

More information on CCR requirements:

US
EPA

<http://water.epa.gov/lawsregs/rulesregs/sdwa/ccr/index.cfm>

– Public Notifications

- <http://water.epa.gov/lawsregs/rulesregs/sdwa/publicnotification/upload/PNrevisedPNHandbookMarch2010.pdf>



Summary

- Emerging unregulated contaminants are present at very low levels.
- Risks to the public from exposure to low levels of unregulated chemicals uncertain.
- Regulations are slow to develop.
- Effectiveness and cost of remediation and treatment options uncertain.
- Presence of these emerging contaminants calls for pollution prevention.

What can you do?

- Protect your source
- Communicate with customers
 - Is this a problem
 - This is a tough one – we are trying to collect more information to be able to address this question
- Help prevent medicine from getting into the water
 - Take all medicine that's been prescribed
 - Do not flush excess medication down the toilet
 - follow ONDCP guidance
 - Get involved in take back programs.





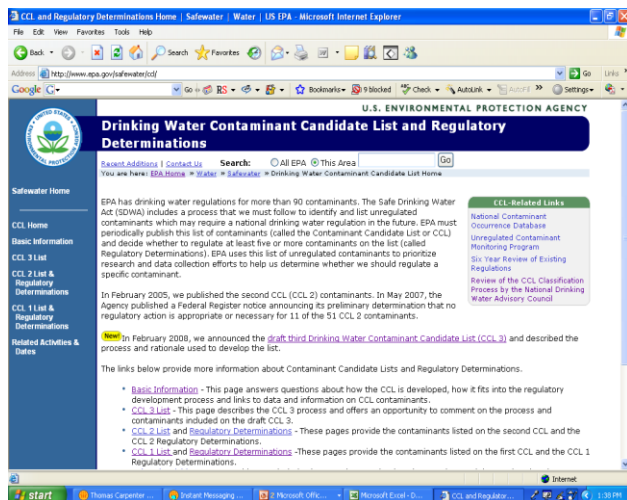
Websites

- Research – <http://www.epa.gov/ppcp/work.html>

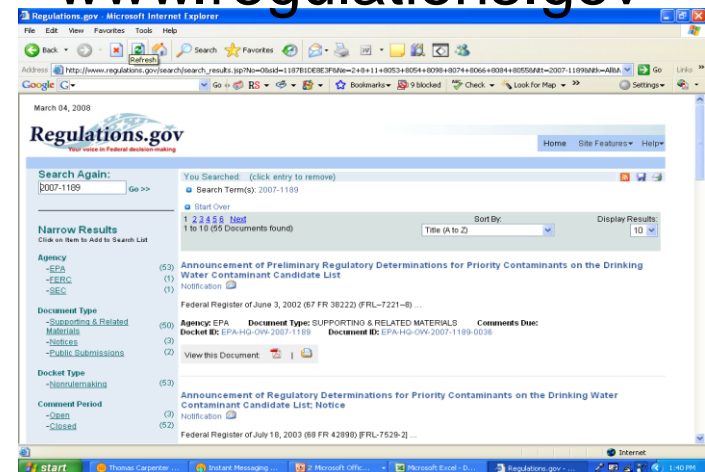
- Disposal -

<http://water.epa.gov/scitech/wastetech/guide/upload/unuseddraft.pdf>

- www.epa.gov/safewater



www.regulations.gov





Websites & Contacts

- http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/upload/UCMR3_FactSheet_List1.pdf
- Chris Ryan – UCMR results
617-918-1567
- Denise Springborg – Emerging Contaminants
617-918-1681

THANK YOU & Questions?